

charged a month after the operation. Six months later, not having felt fully well meanwhile, the patient was readmitted because of increasing anorexia and epigastric pain and jaundice of two weeks' duration. Erythrocytes numbered 3,200,000 per cu. mm. and the hemoglobin value was 63 per cent. Leukocytes numbered 10,550 per cu. mm. and the cell differential was within normal limits. The icteric index was 24 units. The alkaline phosphatase content of the blood was 10.3 units (Bodansky) and the total cholesterol content 258 mg. (43 per cent esters) per 100 cc. The thymol turbidity was 15.5 units and thymol flocculation 3 plus. Total protein content of the serum was 7.2 gm. per 100 cc.—3.8 gm. of albumin and 3.4 gm. of globulin.

During the next two weeks the icteric index declined to 8 units. However, spiking fever developed, with peaks up to 104 degrees F. accompanied by occasional chills. Because of the possibility of metastatic carcinoma of the liver, a biopsy specimen was taken by needle from the liver, and examination of it suggested the possibility of a subdiaphragmatic abscess. (See pathologist's report in later paragraph.) Upon operation a large localized subdiaphragmatic abscess was exposed, incised, and drained. The patient then became afebrile and asymptomatic and had good appetite. He was discharged from the hospital but was readmitted three months later because of return of fever and jaundice three days previously. Surgical exploration was carried out and the subdiaphragmatic abscess over the dome of the liver was again drained. No evidence of metastasis of carcinoma to the liver was observed, but as the gallbladder was distended and there were neoplastic nodules in the region of the common duct, cholecystojejunostomy was performed. Five weeks later the patient was discharged feeling more comfortable than at any time in the previous two years. A month and a half afterward, however, he was readmitted with complaint of severe subcostal pain on the right side, pain in the back, recurrence of jaundice and frequent nausea and vomiting for five days. The edge of the liver was palpable five fingerbreadths below the right costal margin but quality of the surface could not be determined because of ascites. The patient died three months later, slightly more than two and one-half years after onset of symptoms.

PATHOLOGIST'S REPORT

The specimen (which had been removed by needle) was a core of hepatic tissue and several smaller fragments consisting of irregular clusters of degenerating polymorphonuclear leukocytes and fibrin that were adjacent to but did not form part of the core of tissue. The sinusoids at the center of the lobules were dilated and the reticuloendothelial cells there were slightly hyperplastic. No changes were noted in the hepatic cells. The portal triads were unchanged.

DISCUSSION

At the time of the needle biopsy of the liver, the clinical diagnosis was recurrent carcinoma complicated by either obstructive cholangitis or metastatic carcinoma of the liver. There was no indication of subdiaphragmatic abscess. It is a custom in the hospital in which the patient was treated to refer such diagnostic problems related to the liver to a team of internists who are specifically interested in needle biopsy and trained in the technique. Details of the evaluation and preparation of the patient and of the technique have been published.¹ The needle biopsy was done successfully. Experts in the field of liver biopsy specifically admonish that, when a suppurative process is suspected in the right upper quadrant, either above or below the diaphragm, needle biopsy should not be done because of the risk of

spreading the inflammatory process. Had this been suspected clinically in the present case, the procedure probably would not have been carried out. However, the subdiaphragmatic abscess remained localized to the right upper quadrant. Therefore, it must be concluded that in this patient the needle biopsy procedure did not alter the course of the infectious process.

Examination of the specimen led to suspicion that an extrahepatic abscess (probably subdiaphragmatic) was present, in light of the absence of evidence of an inflammatory disease in the core of hepatic tissue and the presence of extrahepatic fragments of necrotic acute inflammatory cells. In view of the absence of clinical evidence of disease of the abdominal wall, pleura or lungs, it was presumed that the inflammatory process lay between the abdominal wall and the hepatic capsule. This was borne out by observation at operation.

SUMMARY

A case report is presented wherein needle biopsy, used to assist in the differential diagnosis of hepatic disease, led to suspicion of the presence of a subdiaphragmatic abscess. This was confirmed by surgical exploration. Thrusting the needle through the abscess did not, in this case, cause extension of the inflammatory process.

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REFERENCE

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Pulmonary Paraffinoma Verified At Thoracotomy

Report of Two Cases

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SINCE 1925 when Laughlen⁹ made the pioneer report on lipid pneumonia, and Ikeda's⁸ study in 1937 when the name paraffinoma was aptly given to a lung tumor made up of mineral oil, reports of many cases have appeared.^{4,5,6,7} Most of the reports are of cases in which the tumor was noted in postmortem examination; few deal with verification of the tumor at the operating table. Brown and Biskind² in 1941 reported a case in which surgical removal of a paraffinoma was carried out. Berg and Burford¹ in 1950 reported six such cases; and Dailey in the same article commented upon three patients who had thoracotomy for mineral oil granuloma. Schneider¹⁰ in 1949 wrote a detailed account on five cases. A year later Flick,³ reporting a case in which surgical treatment was carried out, reemphasized the gross similarity between this lesion and carcinoma. The authors herewith add reports of two cases in which paraffinomas were removed at operation.

CASE 1. A man 60 years of age entered the hospital in September 1950 because of fatigue and pain in the left anterior thoracic region of two months' duration. The pain occurred upon exertion and was relieved by rest. There were no other symptoms except occasional bouts of "acid indigestion," of which the patient had complained in 1947. At that time a small esophageal hiatal hernia had been observed roentgenographically.

In 1947, 1948 and 1949 the patient had used mineral oil daily for a laxative, but he had not used sprays or nose drops containing mineral oil.

The patient appeared to be in excellent health. Upon rectal examination it was noted that the prostate was moderately and diffusely enlarged. X-ray films of the chest were made (Figure 1), and the radiologist reported there was an area of infiltration approximately 3.5 x 4.0 cm. in the right middle lobe, a depression of the transverse fissure and evidence of minimal segmental atelectasis. The remainder of the lung field was clear. The radiologic diagnosis was: Infiltrating neoplastic lesion, right middle lobe.

Films of the gastrointestinal tract reconfirmed the presence of a small esophageal hiatal hernia.

Results of routine examination of the blood and urine were within normal limits, and no abnormalities were noted in an electrocardiogram. Papanicolaou studies of a small specimen of sputum were negative for tumor cells.

No abnormality was seen in a bronchoscopic examination. Material washed from the middle lobe bronchus and a specimen of tissue were negative for tumor cells.

Right thoracotomy was done. The lung was not adherent to surrounding tissue. On the diaphragmatic pleura was a mucoid, fibrinous-appearing series of plaques. The pulmonary ligament was thickened. A firm mass was felt in the center of the lower lobe, presenting on the visceral pleura next to the middle lobe where there were many oily white plaques 2.0 to 3.0 mm. in diameter. Under them was much "puckering" of the visceral pleura. In the middle lobe there was a similar mass presenting toward the lower lobe. Hilar nodes were not enlarged. The mediastinum and upper lobe were normal. Biopsy of material from the pleural plaques and from the tumors in the lung showed inflammatory tissue. Resection was not carried out, and the thoracic wound was closed.

Upon further microscopic examination of the tissue the pathologist reported: "chronic lipoid pneumonia, foreign body reaction, benign, right middle and lower lobes lung; paraffinoma."

The postoperative course was smooth.

X-ray films of the chest were made six weeks after operation, then seven months later and again a year and a half after operation and there were no significant changes in the lung during that time. The patient was in good health.

CASE 2. A woman 61 years of age entered the hospital in September 1952 with a mild but persistent cough that raised very little sputum. The patient reported several episodes of "pneumonia" during the preceding few winters. She had taken Petrolagar daily for at least 15 years.

No evidence of disease was seen in x-ray films of the paranasal sinuses. A film of the chest showed a 3 cm. tumor in the region of the right middle lobe with some atelectasis peripheral to it (Figure 2). A bronchogram showed that the middle lobe bronchus was patent. No further evidence of disease was observed roentgenographically. Results of bronchoscopic examination and of study of bronchial washings were negative for disease and tumor.

Right thoracotomy was done. The pleura was free, although there were interlobar adhesions. There was a small mass in the right middle lobe anteriorly. This did not feel like a carcinoma. It was excised and upon microscopic study it was found to be inflammatory tissue. In the rest of the lobe there were small patches of atelectatic lung. The hilar nodes were not enlarged. There was a healed, hard scar at the apex of the upper lobe.

Upon microscopic examination of the lung tissue the pathologist reported: "Chronic lipoid pneumonia, foreign body reaction, benign, right middle lobe lung; paraffinoma."

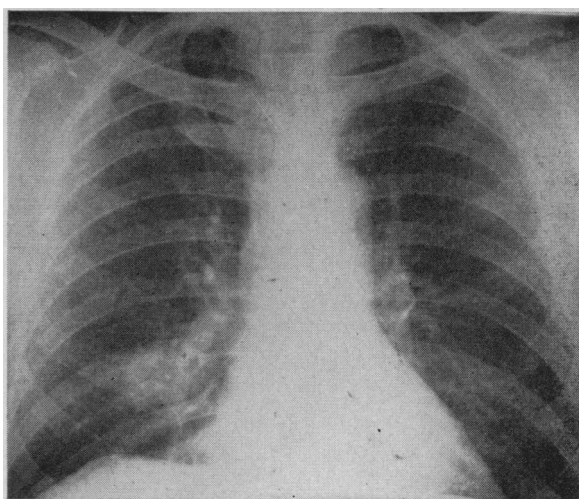


Figure 1—(Case 1) Area of infiltration in right middle lobe.

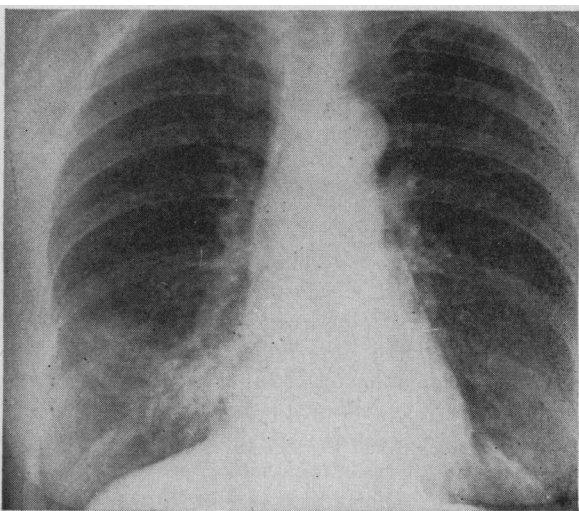


Figure 2—(Case 2) A tumor in the right middle lobe.

The postoperative course was smooth. No abnormality was noted in a film of the chest made a month after operation. The patient was in good health and no longer coughed.

COMMENT

Two patients, one 60 years and the other 61 years of age, with pulmonary mineral oil granulomas were subjected to exploratory thoracotomy to ascertain whether the tumor was malignant or benign. In both instances, by examination of frozen section of the tumor tissue the lesion was found to be non-malignant and conservative excision was carried out with good results.

The need to examine lesions of this kind is apparent, for no one can be certain preoperatively that they are not carcinoma.

Emphasis must be placed upon recognition, at the time of operation, that the disease is non-malignant, lest operation more extensive than is necessary be carried out, with sacrifice of good pulmonary tissue which is particularly important to patients in the older age groups.

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LETTERS to the Editor . . .

An Unknown Bactericidal Serum Factor

AN IMPORTANT CONCLUSION from a study in rabbits of the serological effects of whole body x-irradiation is reported by Marcus and Donaldson* of the University of Utah. They report evidence of the existence of a normal bactericidal serum component thus far ignored by immunologic theorists.

Adult albino rabbits were subjected to one or two whole body x-irradiations with doses varying from 650 r to 725 r, given at a rate of 25 r per minute. Serums drawn from these rabbits before and after irradiation were titrated for their bactericidal power against highly dilute broth cultures of *B. subtilis*. They found that by the end of two hours' incubation

10 per cent normal rabbit serum will reduce the bacterial count from an average of 5,000 organisms per cc. to an average of but 6 organisms. In contrast, postirradiation rabbit serum will allow the count to increase to an average of 13,000 organisms per cc.

They found that the normal bactericidal action of rabbit serum is not reduced on the first postirradiation day. It is depressed by the fifth day and returns to normal by the twentieth day. Of even greater importance is their discovery that the greatly reduced bactericidal power is not accompanied by significant changes in normal antibody or complement titers. The substance inhibited or suppressed as a result of irradiation is apparently a wholly unknown bactericidal serum factor, the nature of which is now under investigation.

*Marcus, S., and Donaldson, D. M.: Suppression of normal bactericidal action of rabbit serum following whole body x-irradiation, *Proc. Soc. Exper. Biol. and Med.*, 83:184, May 1953.

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